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GenCore version 5.1.6  
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OM protein - protein search, using sw model

Run on: June 18, 2003, 03:16:37 ; Search time 37,9222 Seconds  
(without alignments)  
1215.770 Million cell updates/sec

Title: US-09-807-933B-11

Perfect score: 1895

Sequence: 1 MKFSIASALLAASSTVAA.....TFKAVTCPAELIAKTCGERK 346

Scoring table: BLOSUM62  
Gapop 10.0 , Gapext 0.5

Searched: 908470 seqs, 133250620 residues

Total number of hits satisfying chosen parameters: 908470

Minimum DB seq length: 0  
Maximum DB seq length: 200000000

Post-processing: Minimum Match 0%  
Maximum Match 100%

Listing first 45 summaries

Database :

A.GeneSeq\_101002.\*  
1: /SID2/gcgdata/geneSeq/geneSeq-emb1/AA1980.DAT.\*  
2: /SID2/gcgdata/geneSeq/geneSeq-emb1/AA1981.DAT.\*  
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15: /SID2/gcgdata/geneSeq/geneSeq-emb1/AA1994.DAT.\*  
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21: /SID2/gcgdata/geneSeq/geneSeq-emb1/AA2000.DAT.\*  
22: /SID2/gcgdata/geneSeq/geneSeq-emb1/AA2001.DAT.\*  
23: /SID2/gcgdata/geneSeq/geneSeq-emb1/AA2002.DAT.\*

Pred. No. is the number of results predicted by chance to have a score greater than or equal to the score of the result being printed, and is derived by analysis of the total score distribution.

#### SUMMARIES

Result No.	Score	Query Match	Length	DB ID	Description
1	1895	100.0	346	21	AA09826
2	1895	100.0	346	23	AA015057
3	1895	100.0	346	23	AB08065
4	1197	63.2	338	21	AA09824
5	1197	63.2	338	23	AA015055
6	1197	63.2	338	23	AB08063
7	1194	63.0	360	21	AA09823
8	1194	63.0	360	23	AA015054
9	1194	63.0	360	23	AB08062
10	1170.5	61.8	387	21	AA09825

11	1170.5	61.8	387	23	AA015056
12	1170.5	61.8	387	23	AB08064
13	1106	58.4	338	21	AA09821
14	1106	58.4	338	23	AA015052
15	1106	58.4	338	23	AB08060
16	1069	56.4	366	21	AA09822
17	1069	56.4	366	23	AA015053
18	1069	56.4	366	23	AB08061
19	879	46.4	245	23	AA015063
20	855	45.1	228	23	AA015062
21	698.5	36.9	306	19	AAW44270
22	696.5	36.8	200	19	AAW53967
23	689	36.4	223	23	AA015070
24	689	36.4	223	23	AA080602
25	687.5	36.3	200	19	AAW53979
26	686.5	36.2	299	17	AAW04928
27	686.5	36.2	299	19	AAW63624
28	683.5	36.1	202	19	AAW53972
29	683.5	36.1	222	17	AAW04929
30	683.5	36.1	225	21	AAW84798
31	683.5	36.1	225	22	ABW05057
32	683.5	36.1	294	17	AAW04937
33	681.5	36.0	304	19	AAW44272
34	680	35.9	349	17	AAW04927
35	679.5	35.9	200	19	AAW53968
36	678.5	35.8	225	17	AAW04925
37	678.5	35.8	297	17	AAW04933
38	678.5	35.8	308	17	AAW04934
39	672.5	35.5	204	19	AAW53970
40	668	35.3	310	17	AAW04931
41	665	35.1	307	19	AAW44273
42	664.5	35.1	308	19	AAW44271
43	664	35.0	201	19	AAW53966
44	658	34.7	234	19	AAW46618
45	657.5	34.7	306	19	AAW44269

#### ALIGNMENTS

RESULT 1  
AA09826  
ID AA09826 standard; Protein; 346 AA.  
AC AA09826;  
XX  
DT 25-SEP-2000 (first entry)  
XX  
DE Endoglucanase protein sequence 6.  
XX  
KW Endoglucanase; cellulose breakdown; produce pulp; papermaking;  
KW animal Foodstuff.  
XX  
OS Phycomyces nitens.  
XX  
PN WO200024879-A1.  
PD 04-MAY-2000.  
XX  
PF 25-OCT-1999; 99WO-JP05884.  
XX  
PR 23-OCT-1998; 98JP-0302387.  
XX  
PA (MEIJU) MEIJU SEIKA KAISHA LTD.  
XX  
PI Nakamura Y, Moriya T, Baba Y, Yanai K, Sumida N, Nishimura T,  
PI Murashima K, Nakane A, Yaguchi T, Koga J, Murakami T, Kono T;  
DR WPI: 2000-365117/31.  
XX  
DR N-PSDB; AAA62731.  
XX  
PT Endoglucanases of fungal origin with high activity under alkaline  
PT conditions for production of paper pulp and animal feedstuffs -

XX Claim 44; Page 130-132; 180pp; Japanese.

CC This sequence represents an endoglucanase protein. The invention relates  
CC to an endoglucanase of fungal origin which can completely break down  
CC purified cellulose at a concentration of less than 1mg protein/litre,  
CC and produces more than 50% breakdown of cellulose at pH 8.5. The  
CC invention includes endoglucanase protein sequences (see  
CC AAB09825-B09830), endoglucanase nucleotide sequences (see  
CC AAB62726-A62732), and primers (AAB62733-A62802) which are used in the  
CC identification of the endoglucanase sequences, and in the construction of  
CC vectors containing the polynucleotides. The endoglucanase enzymes are  
CC used for the production of pulp for papermaking and for the production of  
CC animal foodstuffs.

XX Sequence 346 AA;

Query Match 100.0%; Score 1895; DB 21; Length 346;

Best Local Similarity 100.0%; Pred. No. 1e-138;

Matches 346; Conservative 0; Mismatches 0; Indels 0; Gaps 0;

```

QY 1 MKFSIIASALLLAASSTYAAECGSGYGCGGKMTGPTCTSGFTCVGAENNEWYSQICP 60
DB 1 MKFSIIASALLLAASSTYAAECGSGYGCGGKMTGPTCTSGFTCVGAENNEWYSQICP 60
QY 61 NDVOGNGPKTTTTTTTAKATTTPVTTTAKATTTTTAKATTTTTAKATTTTTAKTTT 120
DB 61 NDVOGNGPKTTTTTTTAKATTTPVTTTAKATTTTTAKATTTTTAKATTTTTAKTTT 120
QY 121 TKAATTTSSNTGYSPISGSGNGRTTRWDCCKPSCAMDGKASVTKPVLTCADGVS 180
DB 121 TKAATTTSSNTGYSPISGSGNGRTTRWDCCKPSCAMDGKASVTKPVLTCADGVS 180
QY 181 LGSVDVSGCGVGGQAYMCNDNPWVNDLALYGFPAASLSGASAFCCGCELTFTNTAV 240
DB 181 LGSVDVSGCGVGGQAYMCNDNPWVNDLALYGFPAASLSGASAFCCGCELTFTNTAV 240
QY 241 AGKFFVQVNTNGDDLSTNHFDLQMPGGGAGYNGGCGSQMNTTDMGARYGSISSISEC 300
DB 241 AGKFFVQVNTNGDDLSTNHFDLQMPGGGAGYNGGCGSQMNTTDMGARYGSISSISEC 300
QY 301 DKLPTQLQAGCKMRFKFNADNPEVTFAVTCPAEIIAATGGERK 346
DB 301 DKLPTQLQAGCKMRFKFNADNPEVTFAVTCPAEIIAATGGERK 346

```

RESULT 2

AA015057 standard; Protein; 346 AA.

AA015057;  
22-AUG-2002 (first entry)

Phycomyces nitens endoglucanase-related protein.

Zygomycetes-originated endoglucanase; cellulose binding domain;  
fibre processing; waste paper de-inking; paper pulp.

Phycomyces nitens.

WO200242474-A1.

30-MAY-2002.

21-NOV-2001; 2001WO-JP10188.

21-NOV-2000; 2000JP-0354296.

(MEIJ) MEIJI SEIKA KAISHA LTD.

Nakane A, Baba Y, Koga J, Kubota H;

DR WPI; 2002-471729/50.  
DR N-PSDB; AAL43249.

XX Cellulose-binding domain-lacking Zygomycetes-originated endoglucanase,  
PT with effect of endoglucanase activity enhanced in processing fibers,  
PT deinking waste paper and improving freeness of paper pulp -

XX Claim 5; Page 79-80; 109pp; Japanese.

CC The invention comprises the amino acid and coding sequences of  
CC Zygomycetes-originated endoglucanase enzymes lacking the cellulose  
CC binding domain. The Zygomycetes-originated endoglucanase enzymes of the  
CC invention have enhanced endoglucanase activity. The Zygomycetes-  
CC originated endoglucanase enzymes of the invention are useful for  
CC processing fibres, de-inking waste paper and improving the freeness of  
CC paper pulp - which is particularly applicable in detergent compositions.  
CC The present amino acid sequence represents an endoglucanase-related  
CC protein of the invention.

XX Sequence 346 AA;

Query Match 100.0%; Score 1895; DB 23; Length 346;

Best Local Similarity 100.0%; Pred. No. 1e-138;

Matches 346; Conservative 0; Mismatches 0; Indels 0; Gaps 0;

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QY 1 MKFSIIASALLLAASSTYAAECGSGYGCGGKMTGPTCTSGFTCVGAENNEWYSQICP 60
DB 1 MKFSIIASALLLAASSTYAAECGSGYGCGGKMTGPTCTSGFTCVGAENNEWYSQICP 60
QY 61 NDVOGNGPKTTTTTTTAKATTTPVTTTAKATTTTTAKATTTTTAKATTTTTAKTTT 120
DB 61 NDVOGNGPKTTTTTTTAKATTTPVTTTAKATTTTTAKATTTTTAKATTTTTAKTTT 120
QY 121 TKAATTTSSNTGYSPISGSGNGRTTRWDCCKPSCAMDGKASVTKPVLTCADGVS 180
DB 121 TKAATTTSSNTGYSPISGSGNGRTTRWDCCKPSCAMDGKASVTKPVLTCADGVS 180
QY 181 LGSVDVSGCGVGGQAYMCNDNPWVNDLALYGFPAASLSGASAFCCGCELTFTNTAV 240
DB 181 LGSVDVSGCGVGGQAYMCNDNPWVNDLALYGFPAASLSGASAFCCGCELTFTNTAV 240
QY 241 AGKFFVQVNTNGDDLSTNHFDLQMPGGGAGYNGGCGSQMNTTDMGARYGSISSISEC 300
DB 241 AGKFFVQVNTNGDDLSTNHFDLQMPGGGAGYNGGCGSQMNTTDMGARYGSISSISEC 300
QY 301 DKLPTQLQAGCKMRFKFNADNPEVTFAVTCPAEIIAATGGERK 346
DB 301 DKLPTQLQAGCKMRFKFNADNPEVTFAVTCPAEIIAATGGERK 346

```

RESULT 3

ABB08065 standard; Protein; 346 AA.

ABB08065;  
27-AUG-2002 (first entry)

P. nitens CP99002 PCEI protein.

Cellulase; endoglucanase; surfactant; detergent; cellulose; paper;  
pulp treatment; PCEI.

Phycomyces nitens.

Key Location/Qualifiers

FT Peptide 1..19

FT Protein /note= "signal peptide"

FT Protein /note= "mature protein"

WO200238754-A1.

PD 16-MAY-2002.  
 XX  
 XX 12-NOV-2001; 2001MO-JP09858.  
 XX  
 XX 10-NOV-2000; 2000JP-0343921.  
 XX  
 XX (MEIJ) MEIJI SEIKA KAISHA LTD.  
 XX  
 XX Koga J, Nakane A, Baba Y, Kono T,  
 PI  
 XX WPI; 2002-471555/50.  
 DR  
 XX Cellulase preparations containing transconjugant-originated  
 PT endoglucanase and non-ionic surfactants, useful in detergent  
 PT compositions, in treating cellulose fibers and delinking waste paper and  
 PT improving freeness of paper pulp -  
 PS  
 XX Claim 3; Page 32-33; 38pp; Japanese.  
 XX  
 CC The invention relates to a cellulase preparation comprising a  
 CC transconjugant-originated endoglucanase and a non-ionic surfactant. The  
 CC endoglucanase is selected from RCEI, RCEII, RCEIII, MCEI, MCEII or PCEI  
 CC proteins. The preparations are useful in detergent compositions, in  
 CC treating cellulose fibers and delinking waste paper and improving the  
 CC freeness of paper pulp. The fibers treated by the preparations have  
 CC reduced feathering and improved skin-feel and appearance with colour  
 CC clarification, local change in colour and softening, and after delinking  
 CC and paper pulp treatment, there is an improvement on freeness of the  
 CC paper pulp. This treatment with the cellulase preparation can be operated  
 CC at significantly lower cost. The present sequence represents the  
 CC P. nitens CP99002 PCEI protein.  
 XX  
 SO Sequence 346 AA;

Query Match 100.0%; Score 1895; DB 23; Length 346;  
 Best Local Similarity 100.0%; Pred. No. 1e-138;  
 Matches 346; Conservative 0; Mismatches 0; Indels 0; Gaps 0;

QY 1 MKFSIIASALLAASSTYAAECGSGVGGCGGKMTGPTCTSGFTCVGAENNEWYSGCIP 60  
 DB 1 MKFSIIASALLAASSTYAAECGSGVGGCGGKMTGPTCTSGFTCVGAENNEWYSGCIP 60  
 QY 61 NDVOGNGPKTTTTTTTAAATTTTAAATTTTAAATTTTAAATTTTAAATTTTAAATTTT 120  
 DB 61 NDVOGNGPKTTTTTTTAAATTTTAAATTTTAAATTTTAAATTTTAAATTTTAAATTTT 120  
 QY 121 TKAATTTSSNTGYSPISGFGSGNGRTTRYWDCCCKPSGAMDGKASVTKPVLTCAKGVSR 180  
 DB 121 TKAATTTSSNTGYSPISGFGSGNGRTTRYWDCCCKPSGAMDGKASVTKPVLTCAKGVSR 180  
 QY 121 TKAATTTSSNTGYSPISGFGSGNGRTTRYWDCCCKPSGAMDGKASVTKPVLTCAKGVSR 180  
 DB 121 TKAATTTSSNTGYSPISGFGSGNGRTTRYWDCCCKPSGAMDGKASVTKPVLTCAKGVSR 180  
 QY 181 LGSDDVSGCGVGGAYMGNNDQPMVYNDLAVGFPAASISGASAFCCGCELTFTNTAV 240  
 DB 181 LGSDDVSGCGVGGAYMGNNDQPMVYNDLAVGFPAASISGASAFCCGCELTFTNTAV 240  
 QY 241 AGKKFVQVNTNTGDLSTNHFDLQMPGGGAGVYFNGCOSQWNTNTDGMGARVGSISSEC 300  
 DB 241 AGKKFVQVNTNTGDLSTNHFDLQMPGGGAGVYFNGCOSQWNTNTDGMGARVGSISSEC 300  
 QY 301 DKLPLOLAGCKKRFKGFKNADNPEVTFAVTCPAEIIAKTGGERK 346  
 DB 301 DKLPLOLAGCKKRFKGFKNADNPEVTFAVTCPAEIIAKTGGERK 346  
 QY 301 DKLPLOLAGCKKRFKGFKNADNPEVTFAVTCPAEIIAKTGGERK 346  
 DB 301 DKLPLOLAGCKKRFKGFKNADNPEVTFAVTCPAEIIAKTGGERK 346

RESULT 4  
 AAB09824 standard; Protein; 338 AA.  
 ID AAB09824  
 AC AAB09824;  
 XX  
 XX 25-SEP-2000 (first entry)  
 XX  
 DE Endoglucanase protein sequence 4.  
 XX

KM Endoglucanase; cellulose breakdown; produce pulp; papermaking;  
 KM animal feedstuff.  
 XX  
 XX Nucor circineiloides.  
 OS  
 XX WO20024879-A1.  
 PN  
 XX 04-MAY-2000.  
 PD  
 XX 25-OCT-1999; 99WO-JP05884.  
 XX  
 XX 23-OCT-1998; 98JP-0302387.  
 XX  
 XX (MEIJ) MEIJI SEIKA KAISHA LTD.  
 XX  
 PI Nakamura Y, Moriya T, Baba Y, Yanai K, Sumida N, Nishimura T;  
 PI Morishima K, Nakane A, Yaguchi T, Koga J, Murakami T, Kono T;  
 DR  
 XX WPI; 2000-365117/31.  
 DR  
 XX N-PSDB; AAA62729.  
 PT Endoglucanases of fungal origin with high activity under alkaline  
 PT conditions for production of paper pulp and animal feedstuffs -  
 PS  
 XX Claim 44; Page 120-122; 180pp; Japanese.  
 XX  
 CC This sequence represents an endoglucanase protein. The invention relates  
 CC to an endoglucanase of fungal origin which can completely break down  
 CC purified cellulose at a concentration of less than 1mg protein/1litre,  
 CC and produces more than 50% breakdown of cellulose at pH 8.5. The  
 CC invention includes endoglucanase protein sequences (see  
 CC AAB09825-B09830), endoglucanase nucleotide sequences (see  
 CC AAA62726-A62732) and primers (AAA62733-A62802) which are used in the  
 CC identification of the endoglucanase sequences, and in the construction of  
 CC vectors containing the polynucleotides. The endoglucanase enzymes are  
 CC used for the production of pulp for papermaking and for the production of  
 CC animal feedstuffs.  
 XX  
 SO Sequence 338 AA;

Query Match 63.2%; Score 1197; DB 21; Length 338;  
 Best Local Similarity 61.8%; Pred. No. 1.1e-84;  
 Matches 217; Conservative 45; Mismatches 71; Indels 18; Gaps 5;

QY 1 MKFSIIASALLA--ASTYAAECGSGVGGCGGKMTGPTCTSGFTCVGAENNEWYSGO 57  
 DB 1 MKFTVAITSIAYALALSSAABASCSVYGCGGIGMSGPTCCSGSTCVAGGNRYVSO 60  
 QY 58 CIPNDVOQ--GNPKTTTTTTTAAATTTTAAATTTTAAATTTTAAATTTTAAATTTT 115  
 DB 61 CLPGSHSNAGNASTTKTST 107  
 QY 116 TKTITTTAAATTTSSNTGYSPISGFGSGNGRTTRYWDCCCKPSGAMDGKASVTKPVLTCAK 175  
 DB 108 TKTSTTAASSTSTSSAGYKVISGSGSGSTRYWDCCCKASGSKGASVTCGPDVTCAS 167  
 QY 176 DGVSRGSDVOGCGVGGAYMGNNDQPMVYNDLAVGFPAASISGASAFCCGCELTFT 235  
 DB 168 NGISLIDAAVAGCGGNGGNGFCNNQPMVYNDLAVGFPAASISGASAFCCGCELTFT 227  
 QY 236 TTTAAVAGKFFVQVNTNTGDLSTNHFDLQMPGGGAGVYFNGCOSQWNTNTDGMGARVGSIS 295  
 DB 228 TSGAASGKKMNVQVNTNTGDLSTNHFDLQMPGGGAGVYFNGCAAGKAPADGMGARVGSIS 287  
 QY 296 SISSECDKLPLOLAGCKKRFKGFKNADNPEVTFAVTCPAEIIAKTGGERK 346  
 DB 288 SVSDCASLPSALQAGCKKRFKGFKNADNPEVTFAVTCPAEIIAKTGGERK 338

RESULT 5  
 AAO15055 standard; Protein; 338 AA.  
 ID AAO15055  
 XX

AC	AAO15055;
XX	
DT	22- AUG-2002 (first entry)
XX	
XX	Rhizopus arrhizus endoglucanase-related protein 4.
XX	
KW	Zygomycetes-originated endoglucanase; cellulose binding domain;
XX	fibre processing; waste paper de-linking; paper pulp.
XX	
OS	Mucor circinelloides.
XX	
XX	WO200242474-A1.
PN	
XX	
PD	30-MAY-2002.
XX	
PF	21-NOV-2001; 2001WO-JP10188.
XX	
PR	21-NOV-2000; 2000JP-0354296.
XX	
PA	(MEIJ ) MEIJI SEIKA KAISHA LTD.
PI	Nakane A, Baba Y, Koga J, Kubota H;
DR	WPI: 2002-471729/50.
XX	N-PSDB; AAL43247.
PT	
XX	Cellulose-binding domain-lacking Zygomycetes-originated endoglucanase,
PT	with effect of endoglucanase activity enhanced in processing fibers,
XX	deinking waste paper and improving freeness of paper pulp -
PS	Claim 5; Page 68-70; 109pp; Japanese.
XX	
CC	The invention comprises the amino acid and coding sequences of
CC	zygomycetes-originated endoglucanase enzymes lacking the cellulose
CC	binding domain. The zygomycetes-originated endoglucanase enzymes of the
CC	invention have enhanced endoglucanase activity. The zygomycetes-
CC	originated endoglucanase enzymes of the invention are useful for
CC	processing fibres, de-linking waste paper and improving the freeness of
CC	paper pulp - which is particularly applicable in detergent compositions.
CC	The present amino acid sequence represents an endoglucanase-related
CC	protein of the invention.
XX	
SQ	Sequence 338 AA;
	Query Match 63.2%; Score 1197; DB 23; Length 338;
	Best Local Similarity 61.8%; Pred.No. 1,1e-84;
	Matches 217; Conservative 45; Mismatches 71; Indels 18; Gaps 5
OY	1 MKFSIIASALLA---ASTVAEESOGVGCGGKMTGTCCTSGTFCVGAENNEWYSQ 57
DB	1 MKFTVAITSIIVNALSSSAEAASCSVYGCGGIGMSPTCBESGSTCVAGDKKKYISQ 60
OY	58 CIPNDVOQ--GNPKTTTTTTTKATTTKAPVTTKATTTTKAPVTTTKATTTTKTT 115
DB	61 CLPGSHSNNAAGNASTKTSTKTST-----TTAKATAIAVTK---TVRK----TTTKYT 107
OY	116 TTTTTHTKATTTSSNTGTSPISGGSGSGNGRTTRTWDCCKPCSCAMDGRKAVTPVLTKAX 175
DB	108 TKTSITTAASTISTISSAGIKVIISGKSGSSTTRTWDCCKASCMPGRASVTGPVDTCAS 167
OY	176 DGVSRLGSDVDSGCVCVGGQAVMCNQNPWWVNDDLAVGYFAAASLGASGASAFCCGCEYLTF 235
DB	168 NGISILIDANAAGCGNGCNGFMCNNQNPMAVNDLAVGYFAAASLAAGSNEAGMCCGCCYEILTF 227
OY	236 TNTAVAAGKFFVVQVNTTGDDLSTNHFDLDPGGGCGYFNFGCOSQWNNTINDGARYYGIS 295
DB	228 TSGAASGKKMVVQVNTTGDLSTNHFDLDPGGGCGVIFNGCAAOAWGAPNDWGARYGVGS 287
OY	296 SISSEDKLPLOLAGCKRFGMFKNADNDEVTFPKAVTCPAEELIAKTGCERK 346
DB	288 SVSDCASLSALQAGCKMRFMNFKSDNFTMTFKETVCPAEELITTSGCCERK 338*

[illegible]

QY 176 DGVSRIGSDVQSGCVGQAYMCDNDQPMVNVNDLAVGFAAASISGASAFCCGCELT 235  
 DB 168 NGISLIDANQSGCNGNGMCMNNQPMVANNDELAVGFAAASISGASAFCCGCELT 227  
 QY 236 TMTAVAGKFFVQVNTTGDLDSTNHFPLQMPGGGVGYPNGCQSQMNTNTDGMGARYG 295  
 DB 228 TSCAAAGKMMVQVNTTGDLDGSNHFPLQMPGGGVGIFNGCAQWCAFNDGMGARYG 287  
 QY 296 STSECDKLPQLOAGCKMRFGFKNDNPEVTEKATVCPAEIIAKTGCEK 346  
 DB 288 SVSDCASLPALQAGCKMRFGFKNSDNPMTTKEVTCPEALITRSGCEK 338

RESULT 7  
 AAB09823 standard; Protein; 360 AA.  
 AAB09823;  
 25-SEP-2000 (first entry)  
 Endoglucanase protein sequence 3.  
 Endoglucanase breakdown; produce pulp; papermaking;  
 animal foodstuff.  
 Rhizopus oryzae.  
 WO20024879-A1.  
 04-MAY-2000.  
 25-OCT-1999; 99WO-JP05884.  
 23-OCT-1998; 98JP-0302387.  
 (MEIJ ) MEIJI SEIKA KAISHA LTD.  
 Nakamura Y, Moriya T, Baba Y, Yanai K, Sumida N, Nishimura T,  
 Murahina K, Nakane A, Yaguchi T, Koga J, Murakami T, Kono T;  
 WPI; 2000-365117/31.  
 N-PSDB; AAA62728.  
 Endoglucanases of fungal origin with high activity under alkaline  
 conditions for production of paper pulp and animal feedstuffs.  
 Claim 44; Page 115-117; 180pp; Japanese.  
 This sequence represents an endoglucanase protein. The invention relates  
 to an endoglucanase of fungal origin which can completely break down  
 purified cellulose at a concentration of less than 1mg protein/1litre,  
 and produces more than 50% breakdown of cellulose at pH 8.5. The  
 invention includes endoglucanase protein sequences (see  
 CC AAB09825-B09830), endoglucanase nucleotide sequences (see  
 CC AAA62726-A62733) and primers (AAA62733-A62802) which are used in the  
 identification of the endoglucanase sequences, and in the construction of  
 vectors containing the polynucleotides. The endoglucanase enzymes are  
 used for the production of pulp for papermaking and for the production of  
 animal foodstuffs.

QY 1 MKFSIIASALLA-----ASSTVAECGQGVGCGGKMWPTCTGSGTCVGAENNEW 56  
 DB 1 MKRLTIASSXILAVGTEMAHAABCSKAYVCGGKMWDPCTCSGSGTCVDPDPF 60  
 QY 57 QCIPNDQV-----QGNPKTTTTTTKATTTTAKVTTTATTTTATTTTATTTTAT 111  
 DB 57 QCIPNDQV-----QGNPKTTTTTTKATTTTAKVTTTATTTTATTTTATTTTAT 111

Query Match 63.0%; Score 1194; DB 21; Length 360;  
 Best Local Similarity 61.0%; Pred. No. 2e-84;  
 Matches 222; Conservative 43; Mismatches 77; Indels 22; Gaps 7;

DB 61 QCVPMENLSTNKSHTTTTESAKTTTGG-----SKTTTTEASKTTTTEASKTTT 116  
 QY 112 TKTITTTT---KAATTTSS-----NTGSPISGSGSGNGRTTRVDDCKPCGAMGKAS 165  
 DB 117 TTSKKTITTTTAKASTSTSSSSASTNSYASVGSAGSGETTRWDCKPCSGWPKAD 176  
 QY 166 VTKPVLTCADQVSRIGSDVQSGCVGQAYMCDNDQPMVNVNDLAVGFAAASISGAS 225  
 DB 177 VTSPIVSCNCKDKTLADNNTQNGCVGSSYTCNDNDQPMVNVNDLAVGFAAASISG 236  
 QY 226 FCCGCELTFTTAVAGKFFVQVNTTGDLDSTN--HFPLQMPGGGVGYPNGCQSQM 282  
 DB 237 MCCACPELTFTSTAVGKMMVQVNTTGDLDGSNHFPLQMPGGGVGIFNGCAQWCA 296  
 QY 283 NTDGMGARYGISTISECDKLPQLOAGCKMRFGFKNDNPEVTEKATVCPAEIIAKTG 342  
 DB 297 PTDGMGARYGVASADCSNLPALQAGCKMRFGFKNDNPEVTEKATVCPAEIIAKTG 356  
 QY 343 CERK 346  
 DB 357 CSRK 360

RESULT 8  
 AAO15054 standard; Protein; 360 AA.  
 AAO15054;  
 22-AUG-2002 (first entry)  
 Rhizopus arrhizus endoglucanase-related protein 3.  
 Zygomycetes-originated endoglucanase; cellulose binding domain;  
 fibre processing; waste paper de-inking; paper pulp.  
 Rhizopus arrhizus.  
 WO200242474-A1.  
 30-MAY-2002.  
 21-NOV-2001; 2001WO-JP10188.  
 21-NOV-2000; 2000JP-0354296.  
 (MEIJ ) MEIJI SEIKA KAISHA LTD.  
 Nakane A, Baba Y, Kobota H;  
 WPI; 2002-471729/50.  
 N-PSDB; AAL43246.  
 Cellulose-binding domain-lacking Zygomycetes-originated endoglucanase,  
 PT with effect of endoglucanase activity enhanced in processing fibers,  
 deinking waste paper and improving freeness of paper pulp.  
 Claim 5; Page 63-65; 109pp; Japanese.  
 The invention comprises the amino acid and coding sequences of  
 CC zygomycetes-originated endoglucanase enzymes lacking the cellulose  
 CC binding domain. The zygomycetes-originated endoglucanase enzymes of the  
 CC invention have enhanced endoglucanase activity. The zygomycetes-  
 CC originated endoglucanase enzymes of the invention are useful for  
 CC processing fibres, de-inking waste paper and improving the freeness of  
 CC paper pulp - which is particularly applicable in detergent compositions.  
 CC The present amino acid sequence represents an endoglucanase-related  
 CC protein of the invention.

QY 1 MKFSIIASALLA-----ASSTVAECGQGVGCGGKMWPTCTGSGTCVGAENNEW 56  
 DB 1 MKRLTIASSXILAVGTEMAHAABCSKAYVCGGKMWDPCTCSGSGTCVDPDPF 60  
 QY 57 QCIPNDQV-----QGNPKTTTTTTKATTTTAKVTTTATTTTATTTTATTTTAT 111  
 DB 57 QCIPNDQV-----QGNPKTTTTTTKATTTTAKVTTTATTTTATTTTATTTTAT 111

Query Match 63.0%; Score 1194; DB 23; Length 360;  
 Best Local Similarity 61.0%; Pred. No. 2e-84;

Matches 222; Conservative 43; Mismatches 77; Indels 22; Gaps 7;

QY 1 MKFSIIASALLA---ASTYAAECGQGGGKMWGPTCTSGFTCVGAENNEWYS 56  
 DB 1 MKFLTIASSAILALAVGTEMAHAECCKAYOCCGKMDGPTCCSGSTCVDPNPFYS 60

QY 57 OCIPNDVY---QGNPKTTTTTTTAAATTTKAPVTTTAAATTTTAAATTTTAT-TTTT 111  
 DB 61 QCVNENLSTNKSHTTTTBSAKTTTKG---SKTTTTEASKTTTTEASKTTT 116

QY 112 TKTTTCTTTT--KAATTTSS---NTGSPISGSGSGNRTRYMDCCPSGAMDGKAS 165  
 DB 117 TEASKTTTCTTTTAAATTTSSSSSSASTNYSAGSAGSGNETTRVMDCCPSGAMDGKAD 176

QY 166 VTRKVLTCADKGVRLSDVOSGCVGQAVMCDNQPWVNDLAVGFAAASIGSAGASA 225  
 DB 177 VTSFVSGCNKDKTLADNNTQNGCVGSSSYTCNDNQPVVSDDLAVGFAAASIGSSEAT 236

QY 226 FCCGCELTFTNTAVAGKKFVVQVNTGDDISTN---HFDLOMGGGVGVFNGCOSQWNT 282  
 DB 237 MCCACFELFTSTAVKGMVQVNTGSDLSNTGAHFDLOMGGGVGVFNGCATOWGA 296

QY 283 NTDGWGARVGGISSTSECDKLPTOLOAGCKMRFKFNADNPEVTFKAVTCPAEIIATKG 342  
 DB 297 PTDGWGARVGGVSSASDCSNLPSALOGCKMRFKFNADNPTMYKQVTCPKAITAKSG 356

QY 343 CERK 346  
 DB 357 CSRK 360

RESULT 9  
 ID ABB08062 standard; protein; 360 AA.  
 AC ABB08062;  
 XX 27-AUG-2002 (first entry)  
 DT R. oryzae CP96001 RCEIII protein.  
 DE Cellulase; endoglucanase; surfactant; detergent; cellulose; paper;  
 KM pulp treatment; RCEIII.  
 XX Rhizopus oryzae.  
 OS  
 XX  
 FH Key location/Qualifiers  
 FT Peptide 1..23  
 FT /note= "signal peptide"  
 FT Protein 24..360  
 FT /note= "mature protein"

PN MO200238754-A1.  
 XX 16-MAY-2002.  
 PD 12-NOV-2001; 2001MO-JP09858.  
 XX 10-NOV-2000; 2000JP-0343921.  
 PR (MEIJ ) MEIJI SEIKA KAISHA LTD.  
 XX Koga J, Nakane A, Baba Y, Kono T;  
 XX WPI, 2002-47155/50.  
 DR Cellulase preparations containing transconjugant-originated  
 PT endoglucanase and non-ionic surfactants, useful in detergent  
 PT compositions, in treating cellulose fibers and delinking waste paper and  
 PT improving freeness of paper pulp -  
 XX Claim 3, Page 25-27; 38pp; Japanese.  
 XX

CC The invention relates to a cellulase preparation comprising a  
 CC transconjugant-originated endoglucanase and a non-ionic surfactant. The  
 CC endoglucanase is selected from RCEII, RCEIII, MCEII, MCEIII or PCEI  
 CC proteins. The preparations are useful in detergent compositions, in  
 CC treating cellulose fibers and delinking waste paper and improving the  
 CC freeness of paper pulp. The fibers treated by the preparations have  
 CC reduced feathering and improved skin-feel and appearance with colour  
 CC clarification, local change in colour and softening, and after delinking  
 CC and paper pulp treatment, there is an improvement on freeness of the  
 CC paper pulp. This treatment with the cellulase preparation can be operated  
 CC at significantly lower cost. The present sequence represents the  
 CC R. oryzae CP96001 RCEIII protein.

SO Sequence 360 AA;  
 Query Match 63.0%; Score 1194; DB 23; Length 360;  
 Best Local Similarity 61.0%; Pred. No. 2e-84;  
 Matches 222; Conservative 43; Mismatches 77; Indels 22; Gaps 7;

QY 1 MKFSIIASALLA---ASTYAAECGQGGGKMWGPTCTSGFTCVGAENNEWYS 56  
 DB 1 MKFLTIASSAILALAVGTEMAHAECCKAYOCCGKMDGPTCCSGSTCVDPNPFYS 60

QY 57 OCIPNDVY---QGNPKTTTTTTTAAATTTKAPVTTTAAATTTTAAATTTTAT-TTTT 111  
 DB 61 QCVNENLSTNKSHTTTTBSAKTTTKG---SKTTTTEASKTTTTEASKTTT 116

QY 112 TKTTTCTTTT--KAATTTSS---NTGSPISGSGSGNRTRYMDCCPSGAMDGKAS 165  
 DB 117 TEASKTTTCTTTTAAATTTSSSSSSASTNYSAGSAGSGNETTRVMDCCPSGAMDGKAD 176

QY 166 VTRKVLTCADKGVRLSDVOSGCVGQAVMCDNQPWVNDLAVGFAAASIGSAGASA 225  
 DB 177 VTSFVSGCNKDKTLADNNTQNGCVGSSSYTCNDNQPVVSDDLAVGFAAASIGSSEAT 236

QY 226 FCCGCELTFTNTAVAGKKFVVQVNTGDDISTN---HFDLOMGGGVGVFNGCOSQWNT 282  
 DB 237 MCCACFELFTSTAVKGMVQVNTGSDLSNTGAHFDLOMGGGVGVFNGCATOWGA 296

QY 283 NTDGWGARVGGISSTSECDKLPTOLOAGCKMRFKFNADNPEVTFKAVTCPAEIIATKG 342  
 DB 297 PTDGWGARVGGVSSASDCSNLPSALOGCKMRFKFNADNPTMYKQVTCPKAITAKSG 356

QY 343 CERK 346  
 DB 357 CSRK 360

RESULT 10  
 ID AAB09825 standard; protein; 387 AA.  
 AC AAB09825;  
 XX 25-SEP-2000 (first entry)  
 DT Endoglucanase protein sequence 5.  
 DE Endoglucanase; cellulose breakdown; produce pulp; papermaking;  
 KM animal foodstuff.  
 XX phycomyces nitens.  
 OS  
 XX  
 PN MO200024879-A1.  
 XX 04-MAY-2000.  
 PD 25-OCT-1999; 99MO-JP05884.  
 XX 23-OCT-1998; 98JP-0302387.  
 PR (MEIJ ) MEIJI SEIKA KAISHA LTD.  
 XX



PI Nakamura Y, Moriya T, Baba Y, Yanai K, Sumida N, Nishimura T,  
 PI Muraeshima K, Nakane A, Yaguchi T, Koga J, Murakami T, Kono T;  
 XX  
 DR WPI: 2000-365117/31.  
 DR N-PSDB; AAA62730.  
 XX  
 XX Endoglucanases of fungal origin with high activity under alkaline  
 PT conditions for production of paper pulp and animal feedstuffs  
 PS Claim 44; Page 125-127; 180pp; Japanese.  
 XX  
 XX This sequence represents an endoglucanase protein. The invention relates  
 CC to an endoglucanase of fungal origin which can completely break down  
 CC purified cellulose at a concentration of less than 1mg protein/litre,  
 CC and produces more than 50% breakdown of cellulose at pH 8.5. The  
 CC invention includes endoglucanase protein sequences (see  
 CC AAA62730-809830), endoglucanase nucleotide sequences (see  
 CC AAA62726-86732) and primers (AAA62733-862802) which are used in the  
 CC identification of the endoglucanase sequences, and in the construction of  
 CC vectors containing the polynucleotides. The endoglucanase enzymes are  
 CC used for the production of pulp for papermaking and for the production of  
 CC animal feedstuffs.  
 CC  
 XX  
 XX Sequence 387 AA;  
 SQ  
 Query Match 61.8%; Score 1170.5; DB 21; Length 387;  
 Best Local Similarity 54.6%; Pred. No. 1.4e-82;  
 Matches 213; Conservative 51; Mismatches 79; Indels 47; Gaps 4;  
 QY 1 MKPSIIASALLLA--ASSTYAAECGSGYGGCGKMTGPTCTGTCVGAENNEWYSQ 57  
 DB 1 MKFTVAITSIYALALSSAEEAASCSSEVYGCGGIGMTGPTCCDAGSTCAQKDNKXYSQ 60  
 QY 58 CIPNDQ-----VOGN-----PKTTTTTTT 76  
 DB 61 CIPKPKGSSSSSSCSVYSGCGIGMSGPTCCSGSTCAQKGNKXYSQCLPSSHNNAG 120  
 QY 77 KAATTKAPVTTTKATTTTTPVTTTKATTTTTPVTTTKATTTTSSNTGSP 136  
 DB 121 NASTTK--TSTKTSTTKAKATATVTTKTTTSTTTAASTSTSSAGYKY 177  
 QY 137 ISGFGSGNGRTTRVWDCCKPSCAMDGASVTKPVLTCADGVSRGLSDVOSGCVGOAYM 196  
 DB 178 ISGKSGSGSTTRVWDCCKPSCAMDGASVTKPVLTCADGVSRGLSDVOSGCVGOAYM 237  
 QY 197 CNDNQPVVNDLAFGAASAGASAFCCGCEYELFTNTAVAKKFFVQVNTGDDL 256  
 DB 238 CNDNQPVVNDLAFGAASAGASAFCCGCEYELFTNTAVAKKFFVQVNTGDDL 297  
 QY 257 STNHFDLQMPGGGIVGNGCOSOMNTTDMGARYGIGISISECDKLPTOLAGCKWRFG 316  
 DB 298 GSNHFDLQMPGGGIVGNGCAQMGAPNDMGARYGIGISISECDKLPTOLAGCKWRFG 357  
 QY 317 WFNKADNPEVTFKAVTCPAEIIAKTGCEK 346  
 DB 358 WFNKSDNPTMTFKEVTCPAELTTRSGCEK 387  
 RESULT 11  
 ID AAO15056 standard; Protein: 387 AA.  
 XX  
 XX AAO15056;  
 AC  
 XX  
 XX 22-AUG-2002 (first entry)  
 DT  
 XX Rhizopus arrhizus endoglucanase-related protein 5.  
 DE  
 XX Zymomyces-originated endoglucanase; cellulose binding domain;  
 KM fibre processing; waste paper de-inking; paper pulp.  
 XX  
 OS Nucor circinelloides.  
 XX

PN WO200242474-A1.  
 XX  
 PD 30-MAY-2002.  
 XX  
 XX 21-NOV-2001; 2001WO-JP10188.  
 PF  
 XX 21-NOV-2000; 2000JP-0354296.  
 PR  
 XX  
 XX (MEIJU) MEIJI SEIKA KAISHA LTD.  
 PA  
 XX Nakane A, Baba Y, Koga J, Kubota H;  
 PI WPI: 2002-471729/50.  
 DR N-PSDB; AAL43248.  
 XX  
 XX Cellulose-binding domain-lacking Zymomyces-originated endoglucanase,  
 PT with effect of endoglucanase activity enhanced in processing fibers,  
 PT deinking waste paper and improving freeness of paper pulp  
 PS Claim 5; Page 73-75; 109pp; Japanese.  
 XX  
 XX The invention comprises the amino acid and coding sequences of  
 CC zymomyces-originated endoglucanase enzymes lacking the cellulose  
 CC binding domain. The zymomyces-originated endoglucanase enzymes of the  
 CC invention have enhanced endoglucanase activity. The zymomyces-  
 CC originated endoglucanase enzymes of the invention are useful for  
 CC processing fibres, de-inking waste paper and improving the freeness of  
 CC paper pulp - which is particularly applicable in detergent compositions.  
 CC The present amino acid sequence represents an endoglucanase-related  
 CC protein of the invention.  
 CC  
 XX  
 XX Sequence 387 AA;  
 SQ  
 Query Match 61.8%; Score 1170.5; DB 23; Length 387;  
 Best Local Similarity 54.6%; Pred. No. 1.4e-82;  
 Matches 213; Conservative 51; Mismatches 79; Indels 47; Gaps 4;  
 QY 1 MKPSIIASALLLA--ASSTYAAECGSGYGGCGKMTGPTCTGTCVGAENNEWYSQ 57  
 DB 1 MKFTVAITSIYALALSSAEEAASCSSEVYGCGGIGMTGPTCCDAGSTCAQKDNKXYSQ 60  
 QY 58 CIPNDQ-----VOGN-----PKTTTTTTT 76  
 DB 61 CIPKPKGSSSSSSCSVYSGCGIGMSGPTCCSGSTCAQKGNKXYSQCLPSSHNNAG 120  
 QY 77 KAATTKAPVTTTKATTTTTPVTTTKATTTTTPVTTTKATTTTSSNTGSP 136  
 DB 121 NASTTK--TSTKTSTTKAKATATVTTKTTTSTTTAASTSTSSAGYKY 177  
 QY 137 ISGFGSGNGRTTRVWDCCKPSCAMDGASVTKPVLTCADGVSRGLSDVOSGCVGOAYM 196  
 DB 178 ISGKSGSGSTTRVWDCCKPSCAMDGASVTKPVLTCADGVSRGLSDVOSGCVGOAYM 237  
 QY 197 CNDNQPVVNDLAFGAASAGASAFCCGCEYELFTNTAVAKKFFVQVNTGDDL 256  
 DB 238 CNDNQPVVNDLAFGAASAGASAFCCGCEYELFTNTAVAKKFFVQVNTGDDL 297  
 QY 257 STNHFDLQMPGGGIVGNGCOSOMNTTDMGARYGIGISISECDKLPTOLAGCKWRFG 316  
 DB 298 GSNHFDLQMPGGGIVGNGCAQMGAPNDMGARYGIGISISECDKLPTOLAGCKWRFG 357  
 QY 317 WFNKADNPEVTFKAVTCPAEIIAKTGCEK 346  
 DB 358 WFNKSDNPTMTFKEVTCPAELTTRSGCEK 387  
 RESULT 12  
 ID ABB08064 standard; protein: 387 AA.  
 XX  
 XX ABB08064;  
 AC  
 XX  
 XX 27-AUG-2002 (first entry)  
 DT

XX M. circinnelloides CP99001 MCEII protein.  
 DE Cellulase; endoglucanase; surfactant; detergent; cellulose; paper;  
 KM pulp treatment; MCEII.  
 XX Mucor circinnelloides.  
 OS  
 XX  
 XX  
 FT Key location/Qualifiers  
 FT Peptide 1..22 /note= "signal peptide"  
 FT Protein 23..387 /note= "mature protein"  
 FT  
 XX MO20028754-A1.  
 XX  
 XX 16-MAY-2002.  
 XX  
 XX 12-NOV-2001; 2001WO-JP09858.  
 XX  
 XX 10-NOV-2000; 2000JP-0343921.  
 XX  
 XX (MEIJ) MEIJI SEIKA KAISHA LTD.  
 XX  
 XX Koga J, Nakane A, Baba Y, Kono T;  
 PI  
 PI WPI; 2002-471555/50.  
 XX  
 XX Cellulase preparations containing transconjugant-originated  
 PT endoglucanase and non-ionic surfactants, useful in detergent  
 PT compositions, in treating cellulose fibers and deinking waste paper and  
 PT improving freeness of paper pulp  
 XX  
 XX Claim 3; Page 29-31; 38pp; Japanese.  
 XX  
 XX The invention relates to a cellulase preparation comprising a  
 CC transconjugant-originated endoglucanase and a non-ionic surfactant. The  
 CC endoglucanase is selected from RCEI, RCEII, RCEIII, MCEI, MCEII or PCEI  
 CC proteins. The preparations are useful in detergent compositions, in  
 CC treating cellulose fibers and deinking waste paper and improving the  
 CC freeness of paper pulp. The fibers treated by the preparations have  
 CC reduced feathering and improved skin-feel and appearance with colour  
 CC clarification, local change in colour and softening, and after deinking  
 CC and paper pulp treatment, there is an improvement on freeness of the  
 CC paper pulp. This/treatment with the cellulase preparation can be operated  
 CC at significantly lower cost. The present sequence represents the  
 CC M. circinnelloides CP99001 MCEII protein.  
 CC  
 XX Sequence 387 AA;  
 SQ  
 Query Match 61.8%; Score 1170.5; DB 23; Length 387;  
 Best Local Similarity 54.6%; Pred. No. 1.4e-82;  
 Matches 213; Conservative 51; Mismatches 79; Indels 47; Gaps 4;  
 QY 1 MKESTIASALIA---ASTYAAECGSGYCGCGKMTGPTCTGTCVGAENNEMYSQ 57  
 DB 1 MFTVAITSIAVALALSSAERASCSYVGGCGGIGMTGPTCCDAGSTCAQKXKXYSQ 60  
 QY 58 CIPNDQ-----YQGN-----PKTTTTTT 76  
 DB 61 CIPKPGSSSSSSSSSVYSCCGIGMSGPTCCSGSSTVAQGNKXYSQCLPSHSNAG 120  
 QY 77 KAATTTKAPVTTTATTTTATTTTATTTTATTTTATTTTATTTTATTTTATTTTSSN 136  
 DB 121 NASTTK---TSKISTITAKATAVTTTKVTKTTTCTTAAASTSTSSAGYKV 177  
 QY 137 ISGFGSGNGRTTYRWDCCPSKAWDGKASVTPVLTCAKDGVSRIGSVQSCVGVQA 196  
 DB 178 ISGKSGSGSTTRYWDCCKRASCWPKASVTGPDVCAISGLDANAGSGNGNFM 237  
 QY 197 GNDNGPWNVDLAVGPAASLGSAGASAFCCGCGELFTNTAVAGKRFVQVNTGDL 256  
 DB 238 CNNNQPAVNDLAVGPAASLGSAGASAFCCGCGELFTNTAVAGKRFVQVNTGDL 297

QY 257 STNHEDLPNGGCVGYFNGCCOSQNTNDGNGARYGSSISECDKLPYLOAGCKXRF 316  
 DB 298 GSNHFDLPNGGCVGYFNGCAOMGAPNDGNGARYGSSVSDCASLPSALOAGCKXRF 357  
 QY 317 WFKNADNPEVTFRKAVTCPAEIIIAKTGCERK 346  
 DB 358 WFKNSDNPTMTFKEVTCPAELTTRSGCERK 387  
 RESULT 13  
 ID AAB09821 standard; Protein; 338 AA.  
 XX AAB09821;  
 XX 25-SEP-2000 (first entry)  
 XX  
 XX Endoglucanase protein sequence 1.  
 XX  
 XX Endoglucanase; cellulose breakdown; produce pulp; papermaking;  
 XX animal foodstuff.  
 XX  
 XX Rhizopus oryzae.  
 XX  
 XX WO200024879-A1.  
 XX  
 XX 04-MAY-2000.  
 XX  
 XX 25-OCT-1999; 99WO-JP05884.  
 XX  
 XX 23-OCT-1998; 98JP-0302387.  
 XX  
 XX (MEIJ) MEIJI SEIKA KAISHA LTD.  
 XX  
 XX Nakamura Y, Moriya T, Baba Y, Yanai K, Sumida N, Nishimura T;  
 PI Murashima K, Nakane A, Yaguchi T, Koga J, Murakami T, Kono T;  
 PI WPI; 2000-365117/31.  
 DR N-PSDB; AAA62726.  
 XX  
 XX Endoglucanases of fungal origin with high activity under alkaline  
 PT conditions for production of paper pulp and animal feedstuffs  
 PT  
 XX Claim 44; Page 106-108; 180pp; Japanese.  
 XX  
 XX This sequence represents an endoglucanase protein. The invention relates  
 CC to an endoglucanase of fungal origin which can completely break down  
 CC purified cellulose at a concentration of less than 1mg protein/1litre,  
 CC and produces more than 50% breakdown of cellulose at pH 8.5. The  
 CC invention includes endoglucanase protein sequences (see  
 CC AAB09825-B09830), endoglucanase nucleotide sequences (see  
 CC AAA62726-A62732) and primers (AAA62733-A62802) which are used in the  
 CC identification of the endoglucanase sequences, and in the construction of  
 CC vectors containing the polynucleotides. The endoglucanase enzymes are  
 CC used for the production of pulp for papermaking and for the production of  
 CC animal foodstuffs.  
 CC  
 XX Sequence 338 AA;  
 SQ  
 Query Match 58.4%; Score 1106; DB 21; Length 338;  
 Best Local Similarity 59.8%; Pred. No. 1.2e-77;  
 Matches 214; Conservative 35; Mismatches 77; Indels 32; Gaps 9;  
 QY 1 MKESTIASALIA---ASTYAAECGSGYCGCGKMTGPTCTGTCVGAENNEMYS 56  
 DB 1 MFTTASALIALALGTEMASAECSTLYCGCGKMNNGPTCCSGSTC--KSNQYIS 58  
 QY 57 OCTENDVOGNPKTTTTTTTATTTTATTTTATTTTATTTTATTTTATTTT 116  
 DB 59 QCLPSGS-SGN-----KSESHKTTTAAKK--TTAAKKTITAPAK 100  
 QY 117 KTTTAKAAT---TSSSNTG--YSPISGFGSGNGRTTRYWDCCKPSKAWDGKASVTKPVLT 172

Db 101 KTTTAAKASTPNSSSSSSGKYSAVSGAGSGAGVTRRYMDCKKASCSMPGKANVSSPVXS 160  
 QY 173 CAADGYSRLG-SIVOGSCVGGQAYMCDNDQPMVWVNDLAVG?AAASLGSAGSAFCCGCY 231  
 Db 161 CNKDGVTALSDSNAGSCNGNSYMCNDNQPMVWVNDLAVG?AAASLGSAGSAFCCGCY 220  
 QY 232 ELFTFTAVAGKKFVVQVNTGDDLSTN---HFDLQMPGGVGYFNGCOSQWNTNTDGMG 288  
 Db 221 ELFTFTSVAGKKMNVQVNTGDDLSSSTGAHFDLQMPGGVGYFNGCOSQWNPADGMG 280  
 QY 289 ARYGISISSISECDKLPLOLAGCKMRFGKRNADNEVTFKAVTCAPIIATKGCERK 346  
 Db 281 SRYGGISSASDSSLSPLALQAGCKMRFMFKNADNPSMTYKIVTCEPIEITAKTGCSRK 338

RESULT 14  
 ID AAO15052 standard; Protein; 338 AA.  
 AC AAO15052;  
 DT 22-AUG-2002 (first entry)  
 DE Rhizopus arrhizus endoglucanase-related protein 1.  
 KM Zymomyces-originated endoglucanase; cellulose binding domain;  
 KN fibre processing; waste paper de-inking; paper pulp.  
 OS Rhizopus arrhizus.  
 PN MO200242474-A1.  
 PD 30-MAY-2002.  
 PF 21-NOV-2001; 2001MO-JP10188.  
 PR 21-NOV-2000; 2000JP-0354296.  
 PA (MEIJ) MEIJI SEIKA KAISHA LTD.  
 PI Nakane A, Baba Y, Koga J, Kubota H;  
 DR N-PSDB; AAL43244, AAL43250.  
 DR WPI; 2002-471729/50.  
 PT Cellulose-binding domain-lacking Zymomyces-originated endoglucanase,  
 PT with effect of endoglucanase activity enhanced in processing fibers,  
 PT deinking waste paper and improving freeness of paper pulp -  
 PS Claim 5; Page 54-55; 109pp; Japanese.  
 CC The invention comprises the amino acid and coding sequences of  
 CC Zymomyces-originated endoglucanase enzymes lacking the cellulose  
 CC binding domain. The Zymomyces-originated endoglucanase enzymes of the  
 CC invention have enhanced endoglucanase activity. The Zymomyces-  
 CC originated endoglucanase enzymes of the invention are useful for  
 CC processing fibres, de-inking waste paper and improving the freeness of  
 CC paper pulp - which is particularly applicable in detergent compositions.  
 CC The present amino acid sequence represents an endoglucanase-related  
 CC protein of the invention.  
 SO Sequence 338 AA;  
 Query Match 58.4%; Score 1106; DB 23; Length 338;  
 Best Local Similarity 59.8%; Pred. No. 1.2e-77;  
 Matches 214; Conservative 35; Mismatches 77; Indels 32; Gaps 9;

QY 1 MKFSIIASALLA---ASSTYAAECGCGGCGGCKRWPTCTCTSGFTCVGANNEMYS 56  
 Db 1 MKFTTASALLALALCTEMASAECSKLYGCGGCKRWNPCTCESGTC--RVANDYYS 58  
 QY 57 QCIIPNDVQGNPKTTTTTTTAAATTTKAPVTTTATTTTTTTTTPVTTTATTTTTTTT 116

Db 59 QCLPSSGS-SGN-----KSSSESAHKTTTAAHK--TTTAAHKTTTAPAK 100  
 QY 117 KTTTAAAT---TSSNTG-YSPISGSGNGRTTRRYMDCKKPSAMNGKASVTKPVLT 172  
 Db 101 KTTTAAKASTPNSSSSSSGKYSAVSGAGSGAGVTRRYMDCKKASCSMPGKANVSSPVXS 160  
 QY 173 CAADGYSRLG-SIVOGSCVGGQAYMCDNDQPMVWVNDLAVG?AAASLGSAGSAFCCGCY 231  
 Db 161 CNKDGVTALSDSNAGSCNGNSYMCNDNQPMVWVNDLAVG?AAASLGSAGSAFCCGCY 220  
 QY 232 ELFTFTAVAGKKFVVQVNTGDDLSTN---HFDLQMPGGVGYFNGCOSQWNTNTDGMG 288  
 Db 221 ELFTFTSVAGKKMNVQVNTGDDLSSSTGAHFDLQMPGGVGYFNGCOSQWNPADGMG 280  
 QY 289 ARYGISISSISECDKLPLOLAGCKMRFGKRNADNEVTFKAVTCAPIIATKGCERK 346  
 Db 281 SRYGGISSASDSSLSPLALQAGCKMRFMFKNADNPSMTYKIVTCEPIEITAKTGCSRK 338

RESULT 15  
 ID ABB08060 standard; protein; 338 AA.  
 AC ABB08060;  
 DT 27-AUG-2002 (first entry)  
 DE R. oryzae CP96001 RCEI protein.  
 KM Cellulase; endoglucanase; surfactant; detergent; cellulose; paper;  
 KN pulp treatment; RCEI.  
 OS Rhizopus oryzae.  
 PN MO200238754-A1.  
 PD 16-MAY-2002.  
 PF 12-NOV-2001; 2001MO-JP09858.  
 PR 10-NOV-2000; 2000JP-0343921.  
 PA (MEIJ) MEIJI SEIKA KAISHA LTD.  
 PI Koga J, Nakane A, Baba Y, Kono T;  
 DR WPI; 2002-471555/50.  
 PT Cellulase preparations containing transconjugant-originated  
 PT endoglucanase and non-ionic surfactants, useful in detergent  
 PT compositions, in treating cellulose fibers and deinking waste paper and  
 PT improving freeness of paper pulp -  
 PS Claim 3; Page 21-22; 38pp; Japanese.  
 CC The invention relates to a cellulase preparation comprising a  
 CC transconjugant-originated endoglucanase and a non-ionic surfactant. The  
 CC endoglucanase is selected from RCEI, RCEII, RCEIII, MCEI, MCEII or PCEI  
 CC proteins. The preparations are useful in detergent compositions, in  
 CC treating cellulose fibers and deinking waste paper and improving the  
 CC freeness of paper pulp. The fibers treated by the preparations have  
 CC reduced feathering and improved skin-feel and appearance with colour  
 CC clarification, local change in colour and softening, and after deinking  
 CC and paper pulp treatment, there is an improvement on freeness of the  
 CC paper pulp. This treatment with the cellulase preparation can be operated  
 CC at significantly lower cost. The present sequence represents the

CC R. oryzae CP96001 RCEI protein.

Sequence	338 AA;
50	1
100	2
150	3
200	4
250	5
300	6
350	7
400	8
450	9
500	10
550	11
600	12
650	13
700	14
750	15
800	16
850	17
900	18
950	19
1000	20
1050	21
1100	22
1150	23
1200	24
1250	25
1300	26
1350	27
1400	28
1450	29
1500	30
1550	31
1600	32
1650	33
1700	34
1750	35
1800	36
1850	37
1900	38
1950	39
2000	40
2050	41
2100	42
2150	43
2200	44
2250	45
2300	46
2350	47
2400	48
2450	49
2500	50
2550	51
2600	52
2650	53
2700	54
2750	55
2800	56
2850	57
2900	58
2950	59
3000	60
3050	61
3100	62
3150	63
3200	64
3250	65
3300	66
3350	67
3400	68
3450	69
3500	70
3550	71
3600	72
3650	73
3700	74
3750	75
3800	76
3850	77
3900	78
3950	79
4000	80
4050	81
4100	82
4150	83
4200	84
4250	85
4300	86
4350	87
4400	88
4450	89
4500	90
4550	91
4600	92
4650	93
4700	94
4750	95
4800	96
4850	97
4900	98
4950	99
5000	100

Query Match	58.4%	Score 1106;	DB 23;	Length 338;
Best Local Similarity	59.8%;	Pred. No. 1-2e-77/;		
Matches 214;	Conservative 35;	Mismatches 77;	Indels 32;	Gaps 9

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Oy 1 MKRSIIAALALLA-----ASTVAACSCGYOYCGGKMMTGTCTCSFTCVGAENNEWS 56
Db 1 MKKTTIASSMLLALAGTEMASABCSKUYGCGGKMMNGPTCCESSTC- -KVSNDYYS 58
Oy 57 QCIPINDVOGNPKTTTTTTTAKATTAKAVTTTAKTTTTTAKAVTTTAKTTTTTTRT 116
Db 59 QCLPSGS-SEN-----KSESAHKTKTTIAHKK--TTTAAHKTTTAPAK 100
Oy 117 KTTTTKAAT---TSSSNTG-YSPISGSGSGNGRTTTRWDCCKPSCAMDGASVTKVULT 172
Db 101 KTTTVAKASTPSSSSSSSGKTSYAVSGGAGSGVTTTRWDCCKKASCMPGANVSSPVKS 160
Oy 173 CAKDGVSRLLG-SPVOGSGVCGOAYOMKNDNDQPVNWDLALYGPAAALSGSAGASAFCCGCY 231
Db 161 CNKGVTALSDSNAGSCNGCNGANSYKCNNDQPAVAYNDNLAYGPAAAAISGGSESRWCCSCF 220
Oy 232 ELTFNTTAVAGKTRVVQVNTNGDLSN---HFDIQMPGGGVGYNGCGSQGMNNTDNGW 288
Db 221 ELTFSTSVAGKMMVVQVNTNTGGDLSSTGAHFDLQMPGGGVGYLNGSSQGMGAPNDGW 280
Oy 289 ARYGGISISPCDCLPTOLQAGCKMRFGFWFKADNDEPVTFKAVTCPEAIIIAKTGCERK 346
Db 261 SRVGGISASBCSSLPEPALQAGCKMFPNMFKANUDNSMTYKCVETCPKEITIAKTGCESRK 338

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Search completed: June 18, 2003, 15:31:00  
Job time : 38.9222 secs